

AMERICAN DENDROBATID GROUP

Newsletter No. 19

January-February 1995

The purpose of the ADG is to develop better communication between Dendrobatid breeders in North America. It is designed, by its format and bi-monthly distribution, to provide current information and new developments in the hobby. We hope that this will aid us in solving some of the problems which confront us all. This newsletter appears bimonthly at a cost \$10.00 per calander year. Back issues for 1992 are available for \$5.00; back issues for 1993 and 1994 are available for \$10.00/year.

Subscriptions, comments, etc. should be sent to Charles Powell (2932 Sunburst Dr., San Jose, CA 95111 Tel.: (408) 363-0926).

NOTES FROM THE EDITOR

Welcome to another year with the American Dendrobatid Group. We are ready for a most interesting year. Poison frogs are becoming more popular all the time and knowledge on how to keep them is increasing along with their popularity. I already have some interesting articles for this year, including one on Atelopids, and I have high hopes for several more before the end of the year. Many people have asked if there is going to be an increase in membership costs this year because of increased postal costs - there won't be. I promised to keep membership at \$10 for this year and I will, but next year it will have to go up.

Some of you may be wondering about the new header - well its in the works, but wasn't quite done and I didn't want to hold up the Newsletter. We will have it soon and I think you'll be quite impressed. Also I've had a couple of questions about color pictures in the Newsletter, and I'm afraid I just ran out of money last year. The size of the Newsletter has increased over the past few year and this has increased printing and postal costs making it impossible to include color pictures of frogs. But someone has volunteered to print color pictures for the Newsletter and we are working out the details now. Hopefully in the near future we will have a color insert.

One last thing please remember that the Newsletter is what the members make it. If you have idea's, questions, or bits of interesting information you have picked up, please write the editor so you can get it into print. I'd especially like to hear about what medicines are used to treat frogs and what doses are used. Thanks and I wish everyone the best with your frogs.

RAISING LARGE QUANTITIES OF PINHEAD CRICKETS

Bill Lutz

Pinhead crickets are one of the easiest insects to produce in large quantities. The methods that I have come across in the literature are laborious and often the crickets and containers produce an offensive odor. I am currently raising over a half a cup of pinheads a week and spending less than two hours a week doing so. The odor problem is eliminated and the noise from the chirping is greatly

reduced.

Sanitation is the key to this process. The crickets must be clean and dry at all times. The only water required is a small container for drinking and some damp vermiculite for the eggs. Any water spilled in the cricket containers must be cleaned up quickly.

I purchase one thousand adults crickets from a wholesaler every three weeks. These are Gray Crickets, the most common species in the trade. Upon arrival the crickets are evenly divided into four Rubbermaid containers. The containers are Rubbermaid Keepers Clear Box, 44 quart size. They measure-23" long, 16.57" wide and 9" high. They are made of a translucent blue flexible plastic material. The top of the containers are not used but replaced with screen tops that I have made from metal window screening. These containers are stacked with two 2" X 4" pieces of lumber horizontally laid across the top of each container to allow air flow into the container and protect the screen top. This stacking not only saves space but muffles the noise of the chirping.

The bottoms and sides of the containers are too slick for the crickets to walk on or climb. This is an asset as far as the sides but the crickets can not move normally on the bottom. To resolve this problem the bottom of all the containers are sanded with very fine sand paper to help the crickets get enough traction to walk.

Each container has two Styrofoam trays placed on the bottom. They are the trays grocery stores sell one pound ground beef in, they measure 5.25" square. One tray has a little water in it, about 1/16", and the other has about 1/2 cup of Gerber High Protein Cereal for Baby in it. This baby cereal is the only thing I feed my crickets. Each container also has three egg depositing pan on the bottom.

The egg depositing pans are the aluminum pie pans that Swanson individual pot pies come in. They are filled level with the top with vermiculite that can be purchased from a garden supply store. A round piece of metal window screen, cut a little larger than the top of the pie pan, is placed over the top of the pie pan and bent under the lip of the pie pan to secure it in place and keep the adult crickets from digging in the vermiculite. The vermiculite in each container is soaked thoroughly with water and the container is placed upside down on a drain board and allowed to drain for few minutes. Warning! some of the fine particles of vermiculite may come out through the screen and drain out with the excess water, so catch the water in a container and throw the water out into the garden or somewhere like that to prevent clogging your household drains.

Once drained, three egg depositing pans are placed in each container, screen side up. In a matter of hours the crickets will start laying eggs into the vermiculite.

Air circulation around the containers is supplied by a 20" box fan running on low speed and place about six feet from the cricket containers and blowing directly at the cricket containers. The air temperature in my insect room is 72° to 85° F. The air in my basement tends to be humid during the summer and very dry during the winter. If the cricket containers are showing signs of dampness I turn the fan speed up and if it is really dry I sometime turn the fan off for part of the day. This takes a little experience and experimentation.

Now all that remains to be done is every other day give the crickets clean water and refill the feed tray if necessary. Once a week the containers are cleaned and new egg depositing pans are added. To clean the container a spare container is helpful. Simply remove the egg depositing pans, food tray and water tray. Place a clean Styrofoam meat tray on the floor of a clean container and dump the crickets into the tray. The healthy crickets can easily be chased off the tray and the dead crickets and waste can be removed in the tray. The clean container with, the crickets is refurbished. The dirty

container is simply washed with dish soap, rinsed thoroughly and dried. The aluminum pie pans and screen tops for them can be washed and reused. Never reuse the vermiculite.

The egg depositing pans have the wire screening removed. The vermiculite may be packed and occasionally may be moldy. If it is packed it is a good practice to loosen it up. I do this by dumping the vermiculite into a 3 pound coffee can and breaking it up with my finger. The vermiculite is then returned to the egg depositing pan and the pan with the vermiculite is placed in a incubator at 80° F for a week. The vermiculite should be kept damp but not wet during this period. The incubator that I use is nothing more than a 3' by 3' by 2' wooden box with a light bulb for heat. I simply monitor the temperature with a thermometer and change the light bulb to higher wattage to increase the temperature and decrease the wattage to lower temperature.

After one week in the incubator the egg depositing pans are place in Rubbermaid Servin' Saver Rectangle 2.2 gal. storage containers with the modified lid securely on top. About one third of the center of the lid has been cut away and a piece of bed sheet material has been taped over the hole with duct tape. The cloth material allows air and moisture to pass in and out of the box but will prevent the pinhead crickets from escaping. The container with the egg depositing pans is returned to the incubator. This size container I use here will accommodate four egg depositing pans.

The pinhead crickets should begin hatching out in three to seven days and continue hatching for about five days. To harvest the pinheads remove the top of the container and remove the egg deposit trays. The egg deposit pans will be cover with crickets, so place the pans into a container that will prevent the crickets from escaping. For this I use a bucket. Now the pinheads in the original incubation container are shaken into a plastic cup. Replace the egg depositing pans and the lid and return the container to the incubator. There will probably be some pinheads in the temporary holding container, the bucket, that need to be shaken into the plastic cup. One of the biggest tricks to this operation is controlling the condensation on the inside of the incubator containers. If water is on the sides or bottom the container the pinheads will stick to the container and can not be shaken out. Regulating the moisture of the vermiculite will take a little trial and error. I dry the inside of each incubation container, with a paper towel, every time I harvest crickets.

The keys to this method are:

1. Keep the crickets and containers dry with good air circulation. Without a substrate in the container the waste dries out quickly and doesn't decompose, which causes the odor problem.
2. Use fresh vermiculite in the egg depositing pan each time. Vermiculite is inorganic and does not decay but becomes contaminated by the crickets quickly. Occasionally there will be some mold growth on the top of the vermiculite in the incubator. This does not seem to effect the pinheads.
3. Feed only dry baby cereal.
4. Discard the adult crickets after two or three weeks. By this time they are past being very productive and keeping them any longer will result in massive die off.

Problem that need to be addressed:

1. Condensation in the hatching containers while in the incubator. With a little experience this can be minimized but not eliminated.
2. Hatching can be a little erratic. Some days hatches are small and other days they are excessive.

3. Regulating the air flow around the crickets takes a little experience.
4. For some reason the crickets will occasionally eat the Styrofoam trays.

Raising crickets does not have to be a laborious and a stinky operation. With less than two hours of work per week over one half a cup of live insects can be raised for your frogs. That will feed a lot of frogs.

NOTES ON BRIAN MONK'S "KITCHEN COUNTER FROG PATHOLOGY"*

Jack Frenkel

Brian Monk's Kitchen counter frog pathology presents a very good introduction to the subject. Having reviewed many frog sections, I would like to add, that the majority of tissue sections show advanced postmortem decomposition and are generally uninformative. One gets a better idea of what ailed a frog if, after having done all one can to save a moribund frog, one cools it down in a refrigerator till it is dead to do the autopsy on fresh material. Then bacteria and parasites are often still confined to their original site, rather than diffusely throughout the animals, and cultures, smears and tissue sections will be more valuable.

People often attribute to 'stress' that what they cannot explain. 'Stress' as used here is not measurable and unlikely if frogs thrive and reproduce. Most parasites, pentastomids, many nematodes, flat worms and tapeworms need a secondary host, such as a bird, snake or arthropod, which is not found in terraria. Hence most such infections are self-limited and rarely disease-producing. Allodero, an annelid worm, can multiply in the host. Some nematode eggs passed with the feces are infectious to the frog, not requiring a secondary host. Thus the annelid and a few nematodes may build up in Dendrobatid frogs and can cause illness or death. The latter is merely a consequence of confinement of feces and frogs in a small space; there is no evidence of stress of captivity causing or aggravating infections that I know of.

*Editors note: Brian Monk's "Kitchen counter frog pathology" was published in the ADG Newsletters, No. 18 and 19.

HELPFUL HINTS

Cure for Spindly-leg Syndrome! - As outline in ADG no. 12 (Conformation of adult frogs causing spindly-leg in tadpoles) I had a problem in which 98% of tadpoles produced from a trio of Panamanian *Dendrobates auratus* developed spindly-leg syndrome. At the beginning of last year I started a vitamin regiment using Nekton-R® and Nekton-E® (both from Nekton-Produkte, Germany) combines with an approximate ratio of 50:50 and powdered using a mortar and pestle. This mixture was then "shake and baked" on fruit flies and feed to the adult frogs. This year (1994) I have completely eliminated spindly-leg and produced over 30 healthy, beautiful little froglets. While the exact cause of spindly-leg is still unknown these data suggests that the culprit can be narrowed down to a deficiency in one or more of the constituents in the two Nekton products. Our next helpful hint comes from Kevin Wright of the Philadelphia Zoological Gardens.

***Dendrobates tinctorius* fatality attributed to decorative moss** - Spanish moss (*Tillandsia usneoides*), a common epiphytic plant of the southern Untied States, is not recommended as a cage accessory with amphibians such as dart frogs. An exhibit at the Philadelphia Zoo had housed a group of 0.0.5 tye-dye poison frogs (*Dendrobates tinctorius*) for four years without incident, and small clumps of

Spanish moss were used as decoration in the upper reaches of the enclosure out of reach of the dart frogs. The base supporting a clump of the Spanish moss had rotted, and the clump fell to the ground one night. An adult male frog was found entangled with the thin strands (which resemble dark monofilament netting). These strands had encircled the frog around the caudal abdomen immediately cranial to the femoral head. These strands had caused full thickness skin lacerations encircling the body, and were imbedded in the underlying muscle mass. The frog was sedated with 0.1% tricaine methanesulfonate and the strangulating strands were incised and removed. The tissue trauma was quite extensive, and there was considerable blood loss following removal of the strands. After recovery from anesthesia, the frog was bathed in 0.5% gentamicin sulfate (50 mg gentamicin sulfate in 10 ml of aged water) for 1 hour, and a second bath of 10% oxytetracycline was administered in the late afternoon. The frog was dead the following morning. Upon re-examination of the cage, it was determined that these strands were natural structures of the Spanish moss. Based upon this experience, all materials placed within a poison frog enclosure should be carefully evaluated in regards to entrapment of the frogs.

The Dutch Frog Day will be held at Maarn, Nr. Utecht, Holland on the 20th of May this year.

NEW LITERATURE

General husbandry

Wright, Kevin, 1994, Acclimation-maladaptation syndrome in captive amphibians. *The Vivarium*, 6(3): 12-13.

Atelopids

Kaplan, Moises, 1994, Analysis of some long-standing controversies concerning the pectoral girdle of *Atelopus* (Bufonidae) using ontogenetic studies. *Journal of Herpetology*, 28(1): 128-131.

Dendrobatids

Bradfield, Tristan and Quest, Rob, 1993, The husbandry, breeding and rearing of the poison arrow frog, *Epipedobates tricolor*. *ASRA Journal*, 1993: 42-48.

Brust, Douglas G., 1993, Maternal brood care by *Dendrobates pumilio*: a frog that feeds its young. *Journal of Herpetology*, 27(1): 96-98.

Colwell, Gregory J., 1994, In response to Bringsøe on the inclusion of *Dendrobates* and *Phyllobates* in Appendix II of CITES. *Herpetological Review*, 25(1): 10.

Fenolio, Danté, 1994, Natural history and captive husbandry notes on Lehmann's dart-poison frog (*Dendrobates lehmanni*). *The Vivarium*, 6(3): 12-13.

Haddad, Célio F. B. and Martins, Marcio, 1994, Four species of Brazilian poison frogs related to *Epipedobates pictus* (Dendrobatidae): taxonomy and natural history observations. *Herpetologica*, 50(3): 282-295.

Junca, Flora A., Altig, Ronald and Gascon, Claude, 1994, Breeding biology of *Colostethus stepheni*, a Dendrobatid frog with nontransported nidiocular tadpoles. *Copeia*, 1994(3): 747-750.

Kaiser, Hinrich and Altig, Ronald, 1994, The atypical tadpole of the Dendrobatid frog, *Colostethus chalcopis*, from Martinique, French Antilles. *Journal of Herpetology*, 28(3): 374-378.

Roithmair, Margarete E., 1994, Male territoriality and female mate selection in the dart-poison frog *Epipedobates trivittatus* (Dendrobatidae, Anura). *Copeia*, 1994(1): 107-115.

Walls, Jerry G., 1994, *Dendrobates tinctorius*, the Dyeing Poison frog. *Tropical Fish Hobbyist*, XLIII(2): 234-236, 238, 240-241.

ADDS:

Starting with this issue we are including business card adds. Rates are \$10 per issue or \$50 per year. If you are interested please contact the Newsletter editor. All other adds for sale of frogs, or requests or offering of breeding loans are free to members. Also please remember to update your add. If you sell out of frogs offer below please notify the Newsletter editor.

**For Sale**

<i>Dendrobates auratus</i> 'Hawaii'	\$25 ea.	Eric Anderson
<i>Dendrobates leucomelas</i> 'Orange'	\$60 ea.	12231 Newberry Rd.
<i>Dendrobates tinctorius</i> 'Cobalt'	\$40 ea.	Gainesville, FL 32607
<i>Dendrobates tinctorius</i> 'Brazil' (lots of yellow)	\$60 ea.	(904) 332-7908
<i>Epipedobates tricolor</i> (3 morphs)	\$30 to \$50 ea.	
<i>Epipedobates azuraventris</i>	\$50 ea.	Terry Chatterton P. O. Box 622 Kiowa, CO 80117 (303) 621-2442
<i>Dendrobates auratus</i> 'Hawaii' (will consider trades)	\$25 ea.	Jeffrey Chin 3814 Irving St. San Francisco, CA 94122 (415) 753-5109

<i>Dendrobates leucomelas</i> 'Orange'	\$70 ea.	Jeffrey Lee Department of Chemistry Duke University Durham, NC 27708 (919) 382-3059
<i>Dendrobates leucomelas</i>	\$40 to \$60	Anthony Leiro 402 Holly Lane Chapel Hill, NC 27514 (919) 929-3522
<i>Phyllobates vittatus</i> (nice color)	\$40 ea	Larry J. Marshall 1239 Park Ave. Chicago Heights, IL 60411 (708) 754-7692
<i>Dendrobates auratus</i> 'Zwartgroene' (a Panamanian form which is 80% black)	\$50 ea.	Charles Powell 2932 Sunburst Dr. San Jose, CA 95111 (408) 363-0926
<i>Epipedobates tricolor</i> 'Santa Isabel' (bright red and white form)		
tadpoles	\$20 ea. (6/\$100)	
juvenile frogs (small)	\$40 ea.	
<i>Dendrobates azureus</i> (F1 from wild caught adults)	\$150 ea	Jack H. Wattley 2500 Sea Island Dr. Ft. Lauderdale, FL 33301 (305) 436-5011 FAX (305) 463-4716
Wanted:		
<i>Dendrobates imitator</i> 'Red head'		Larry J. Marshall 1239 Park Ave. Chicago Heights, IL 60411 (708) 754-7692

Charles Powell (2932 Sunburst Dr., San Jose, CA 95111 (408) 363-0926) is looking for good pictures of any form of *Epipedobates tricolor* for an article on this frog. The article will be printed in a popular reptile and amphibian journal. I cannot afford to pay for pictures but photographic credit will be given in the article for any photographs used.

Societies

AMERICAN TARANTULA SOCIETY: For enthusiasts and scientists. Forum (6/yr) educational, entertaining and readable. For your free copy write: ATS, P. O. Box 2594, S. Padre Island, TX 78597. \$15/year US, \$20/year Canada, \$30/year elsewhere.

NEW MEMBERS

Charles Abernathy (Washington)
Brother Antony Green (California)
Rod Chandler (California)
Jeffrey Chin (California)
Neal Combs (Indiana)
Melissa Gubble (Texas)
Andy Grubbs (Texas)
Daniel Hawkins (Minnesota)
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Todd Kelley (Washington)
Gary Lackie (Alaska)
Troy Langhover (Kansas)
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Lili Mayer (Virginia)
Ken Naugher (Iowa)
Kenneth Orth (Puerto Rico)
Gary Putnam (New York)
Charles Robinson (Missouri)
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